

***Remarks***

Reconsideration of remaining claims 12, 15-16, 18, 20, 29-32, 37-42 is respectfully requested. Applicants also request consideration of newly-submitted claim 43.

In the Office action dated October 19, 2004 (application Paper No. not shown), the Examiner objected to the drawings and rejected various combinations of the pending claims under 35 USC §§ 112, second paragraph, 102(b) and 103(a). The Examiner's various objections and rejections will be addressed below in the order appearing in the Office action.

***Drawings Objections***

The Examiner first objected to the drawings as failing to comply with 37 CFR 1.84(p)(4) in that the reference character "6906b" was used to designate both a "gap region" and an "evanescent coupling region". In response, applicant has amended the specification to properly refer to an "evanescent coupling *gap* region" --- the two references in the prior version of the specification were indeed intended to refer to the same component in the inventive arrangement. Applicant believes that the amendment to the specification satisfies this objection by the Examiner.

The Examiner next referred to the use of reference numerals "7312" and "7310" as being used in sequential figures to refer to the same element. With this response, applicant is submitting a "replacement" drawing sheet with the proper use of these numerals. Similarly, the Examiner objected to the drawings as not include various reference numerals appearing in the specification. The requested additions have been made, and are included on the "replacement sheets" appended to this response.

Applicant believes that with the amendment to the specification and the various amendments to the drawings, each one of the Examiner's objections has been fully met. Application thus respectfully requests the Examiner to reconsider these objections and find the case to now be in proper form.

***35 USC § 112, second paragraph Rejection – Claim 38***

The Examiner first rejected claim 38 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the present invention. In particular, the Examiner cited the term “the relatively narrow waveguide” as recited at line 15 of claim 38 as lacking proper antecedent basis. In response, applicant has amended claim 38 to provide the necessary antecedent basis.

In light of the amendment to claim 38, applicants respectfully request the Examiner to reconsider the 35 USC 112, second paragraph rejections and find claim 38 to now be in condition for allowance.

***35 USC § 102(b) Rejection – Claims 12, 15, 20, 30- 32 and 37***

The above-cited claims were rejected by the Examiner under 35 USC 102(b) as being anticipated by US Patent 5,987,196 (Noble). In response, applicant has amended independent claim 12 and asserts that Noble does not disclose, suggest, or anticipate any use of “evanescent coupling” “including a gap region positioned in the plane of the upper silicon layer between the light deflector and the relatively narrow waveguide for optically coupling the redirected light propagating within the upper silicon layer into the relatively narrow waveguide, such that light redirected from the light deflector can pass via the evanescent coupling gap region to the relatively narrow waveguide at the predetermined mode angle”, as defined by amended claim 12. Noble discloses an arrangement where (purportedly) an optical signal is generated by device 80 in layer 88 (referring to FIG. 9), the signal then propagating through the thickness of layer 90 and reflected by a turning mirror into waveguide 72.

Independent claim 12 has been amended to more accurately describe the function of the present invention as all occurring within the upper silicon (surface) layer of an SOI structure. The light deflector (various embodiments being shown in FIGs. 69, 70 and 71) being a two-dimensional device that interacts with a planar wave propagating within the slab waveguide. Evanescent coupling is used to direct the propagating planar optical signal into the relatively narrow waveguide. The mode angle needs to be well-controlled in order for the requisite evanescent mode coupling to occur. Noble does not address this

issue, nor is Noble concerned with providing evanescent coupling of a propagating, planar signal into a relatively narrow waveguide.

Based on these differences, therefore, applicant assert that Noble cannot be found to anticipate the subject matter of (amended) claim 12, or remaining claims 15, 20, 30- 32 and 37 which depend therefrom. Applicants therefore respectfully request the Examiner to reconsider this rejection and find the cited claims to be in condition for allowance.

### ***35 USC § 103(a) Rejection – Claim 38***

The Examiner next rejected claim 38 under 35 USC 103(a) as being unpatentable over US Patent 5,502,779 (Magel) in view of US Patent 3,617,109 (Tien). As with the Noble reference, applicant asserts that Magel does not disclose or suggest the use of “evanescent coupling” as that term is defined by the rejected claims. The Tien reference cited by the Examiner is directed to coupling a free space optical beam into a planar waveguide. In contrast, the arrangement of the present invention utilizes evanescent coupling to direct an optical signal propagating within the upper silicon layer through a mode angle suitable for coupling into a relatively narrow waveguide, also formed in the upper silicon layer. Simply stated, Tien is directed to providing a three-dimensional to two-dimensional conversion of a free space optical signal into a waveguide-propagating signal. The present invention is directed to modifying a two-dimensional signal already propagating within the slab waveguide.

Thus, applicants assert that the combination of Magel and Tien still lacks any teaching of providing evanescent coupling as defined by rejected claim 38. Applicants therefore respectfully request the Examiner to reconsider this rejection and find claim 38 to be in condition for allowance.

### ***Allowable Subject Matter***

The Examiner has objected to claims 16, 18, 29 and 39-42 as containing patentable subject matter, but dependent from rejected independent claims. Inasmuch as applicants believe that the above amendments have now placed claims 12 and 38 in

condition for allowance, it is asserted that the cited claims remain allowable in their current, dependent form.

***Summary***

Each of the Examiner's rejections has now been responded to and applicant requests the Examiner to reconsider the various rejections. If the Examiner believes that an interview or telephone conversation would further the prosecution of this application, the Examiner is invited to contact applicant's attorney at the telephone number listed below.

Respectfully submitted,

Shrenik Deliwala

By: Wendy W. Koba  
Wendy W. Koba  
Reg. No. 30509  
Attorney for applicant  
610-346-7112

Date: 1/19/2005